



1074121

Memorandum

To: Mark Raney, Volpe Center Task Order Manager

From: Nick Raines, CDM Field Team Leader

Date: November 20, 2007

Subject: Flower Creek Investigation Summary

Background

A visual inspection of the banks and streambed of Flower Creek was completed during August 2007. The overall purpose of the investigation was to visually confirm the presence/absence of suspect Libby Amphibole (LA) containing material. This investigation was conducted as outlined in the previous memo titled "Flower Creek Investigation, August 10, 2007". The purpose of this document is to summarize the findings of this initial investigation.

Limits of Investigation

The investigation was limited to a 2.5-mile section of the creek adjacent to residential and commercial properties that flows through the immediate Libby area as described below:

- Upstream Limit: Southern property boundary of 823 Flower Creek Rd
- Downstream Limit: Outlet to the Kootenai River

Summary of Findings

The investigation findings are split into two sections based on geographic location and field observations. The first section is from the West Balsam Street bridge to the upstream limit of the investigation. The second section is from the West Balsam Street Bridge to the downstream limit (Kootenai River) of the investigation.

The general locations and approximate lateral extent of suspect material is shown in Appendix A. A cross section of the creek at each location where suspect material was observed is shown in Appendix B. Photo documentation of each location where suspect material was observed is shown in Appendix C.

Suspect material is defined by material that, based on field observations, contains rock that has similar physical characteristics as Libby Amphibole or vermiculite.

West Balsam Street Bridge to the Upstream Limit:

The following are locations where suspect LA-containing material was observed. The following is a brief description at each location:

GPS Location FC1 -

Located along the east creek bank adjacent to 511 W. Balsam St, this location contains a large deposit of suspect material, with rocks ranging from 1 to 12 inches in diameter. A plastic tarp is currently covering the extent of the suspect material.

GPS Location FC2 -

Located along the west creek bank, this location contains a sparse deposit of highly concentrated suspect material with several rocks that are approximately 12 inches in diameter. There is a soil layer covering the majority of the deposit suspect material.

GPS Location FC3 -

Located along the east creek bank adjacent to 367 Cedar St Ext, this location contains a large deposit of suspect materials with rocks that are approximately 24 inches in diameter. Small pieces of amphibole and vermiculite were also readily observed at this location.

GPS Locataion FC4 -

Located along the west creek bank adjacent to 521 Flower Creek Rd, this location contains a large deposit of suspect material with rocks that are approximately 24 inches in diameters.

GPS Location FC5 -

Located along the east creek bank adjacent to 367 Cedar St Ext, this location contains a large deposit of suspect rocks that are approximately 24 inches in diameters. The material at this location was similar to GPS location FC4.

GPS Location FC6 -

Starting at this location and continuing upstream, suspect rock was observed sporadically along both creek banks, as well as in some places along the creek bed. This suspect material was similar in size and condition to the material found at locations FC3, FC4, and FC5.

From GPS location FC6, no other GPS locations were established upstream to the investigation limit due to the continuously sporadic nature of the deposited suspect rock.

West Balsam Street Bridge to the Downstream Limit:

A visual inspection for suspect material was conducted downstream of the West Balsam St bridge to the Kootenai River and no suspect material was observed. However, at least one area was identified as having potential for contamination to be deposited as it is carried downstream. This location is a large overflow pond approximately half way between the upstream and downstream limit of the investigation. At the time of the investigation, this overflow pond was primarily dry, but contained a large amount of small deposited rock.

Conclusions

The suspect material observed in all upstream locations exhibited similar physical characteristics. This suspect material appears to have been taken from the same source area and placed along the creek banks during rebuild/stabilization efforts, and does not appear to be native to the creek bed or immediate surrounding areas.

Due to the extent of visible contamination/suspect material in contact with stream-flow, additional inspection and sampling will be required to confirm the presence/absence of contamination in the downstream sections of the creek.

Recommendations

The following activities are recommended prior to completing a full remediation design:

- 1 - Full land survey of the affected areas. This survey should be completed by a licensed land surveyor registered in the state of Montana.
- 2 - Sampling activities to confirm presence/absence of contamination downstream of West Balsam St.
- 2 - Detailed Pre-design Inspection of affected areas, including hydrologic assessment.

Attachments

Appendix A - Visual Inspection Results
Appendix B - Creek Cross-section Sketches
Appendix C - Photo Log

cc: Steve Losier - Volpe Center
Courtney Zamora - Volpe Center, Libby
Tim Wall - CDM, Cambridge
Jeff Montera - CDM, Denver
Paul Lammers - CDM, Libby
Tommy Cook - CDM, Libby
Libby Project File - Denver

Attachment A
Flower Creek Visual Inspection Results
General Location of Observed Suspect Material

An aerial photograph of a landscape featuring a mix of dense green forests, open brownish-yellow fields, and a residential area with numerous small houses. A series of red rectangular boxes are overlaid on the image, arranged in a descending staircase pattern from the top center towards the bottom right. Each box is accompanied by a yellow label with black text. A red line points from the 'West Balsam St. Bridge' label to a specific location in the top left. A small blue line is visible at the very top center.

West Balsam St. Bridge

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An aerial photograph of a residential neighborhood. A red vertical bar is placed on a street. Two yellow labels with red arrows point to this bar: 'FC1' on the left and '511 W. Balsam St.' on the right. Two text boxes are in the upper left: a solid red one with 'High amounts of suspect LA-containing rocks' and a hatched one with 'Intermittent amounts of suspect LA-containing rocks'.

High amounts of suspect LA-containing rocks

Intermittent amounts of suspect LA-containing rocks

FC1

511 W. Balsam St.

High amounts of suspect LA-containing rocks

Intermittent amounts of
suspect LA-containing rocks

FC2

384 Flower Creek Rd.



High amounts of suspect LA-containing rocks

Intermittent amounts of
suspect LA-containing rocks

FC3

367 Cedar St. Extension

FC4

521 Flower Creek Rd.

FC5



High amounts of suspect LA-containing rocks

Intermittent amounts of
suspect LA-containing rocks

FC6

615 Flower Creek Rd.



High amounts of suspect LA-containing rocks

Intermittent amounts of suspect LA-containing rocks

791 Flower Creek Rd.

823 Flower Creek Rd.

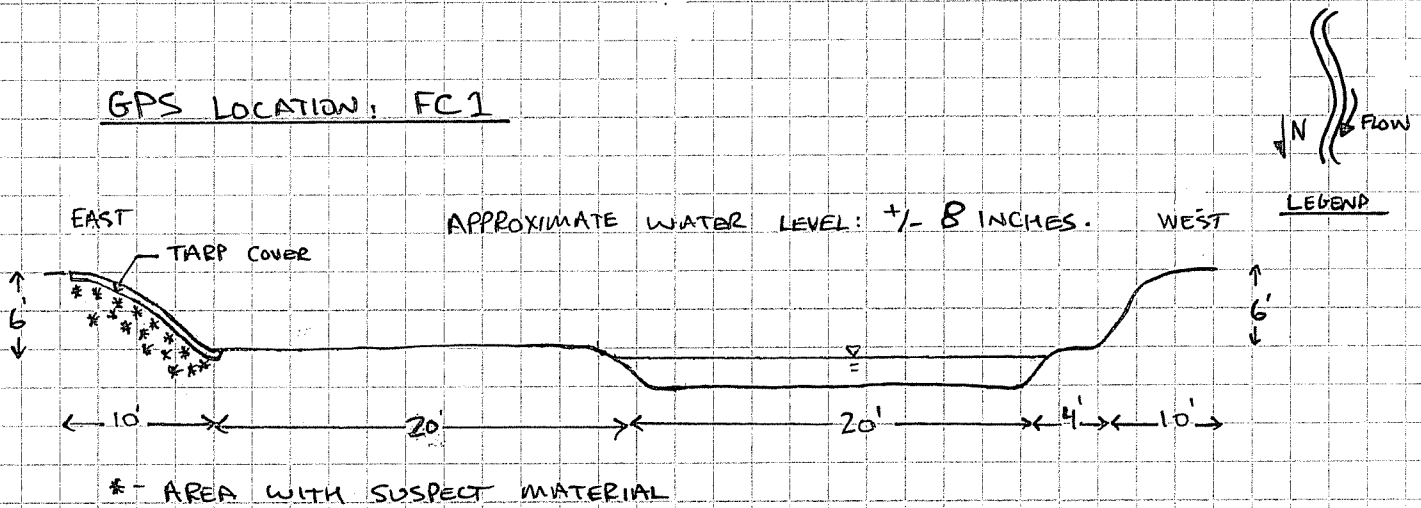


Overflow channel and pond areas

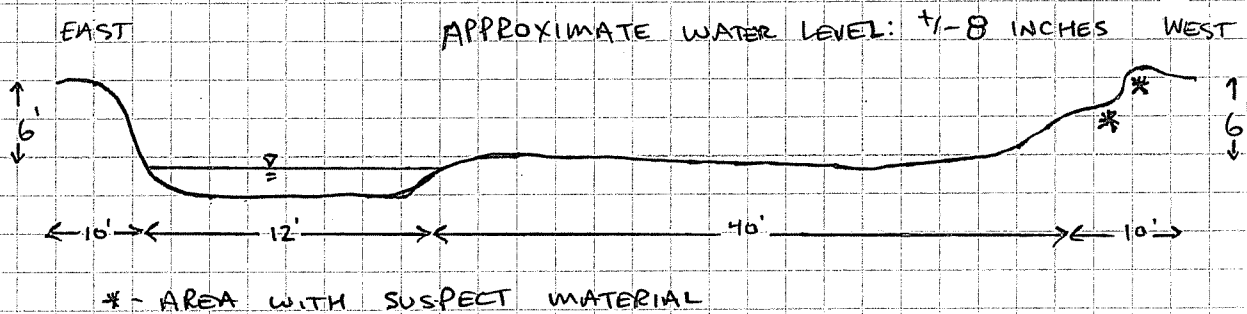
Attachment B
Flower Creek Cross-section Sketches

GPS LOCATIONS - CROSS SECTIONS OF PORTIONS OF FLOWER CREEK.

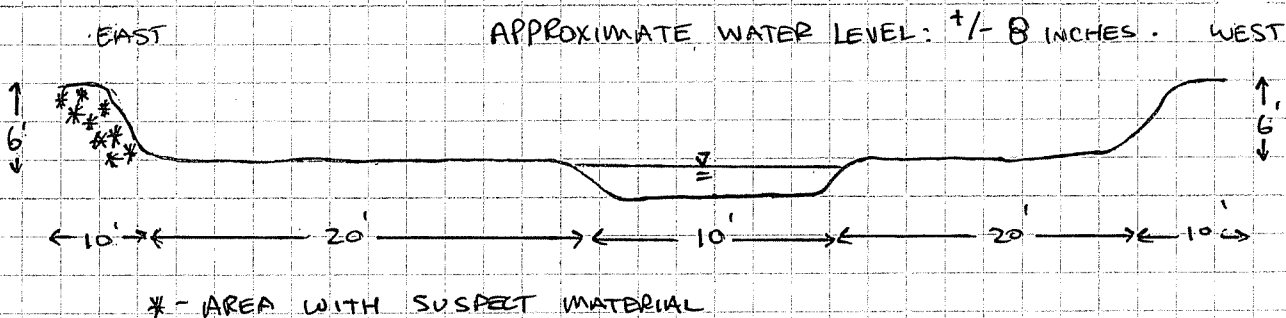
GPS LOCATION: FC1



GPS LOCATION: FC2

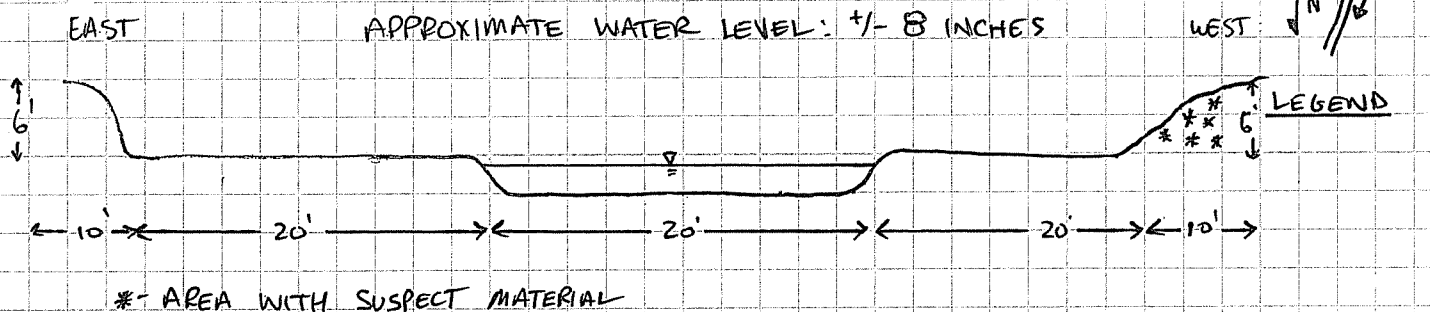


GPS LOCATION: FC3

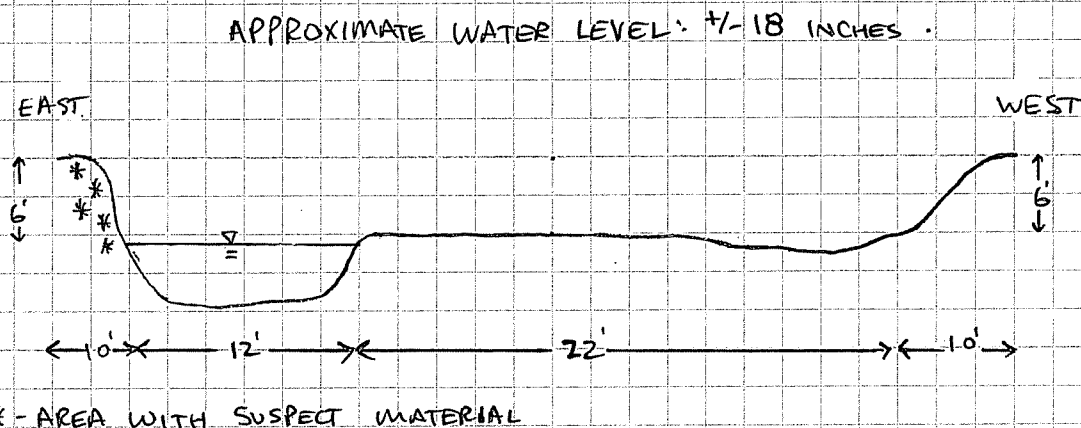


GPS LOCATIONS - CROSS SECTIONS OF PORTIONS OF FLOWER CREEK

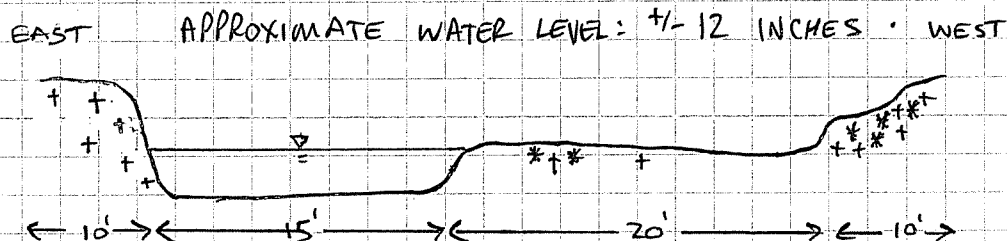
GPS LOCATION: FC4



GPS LOCATION: FC5



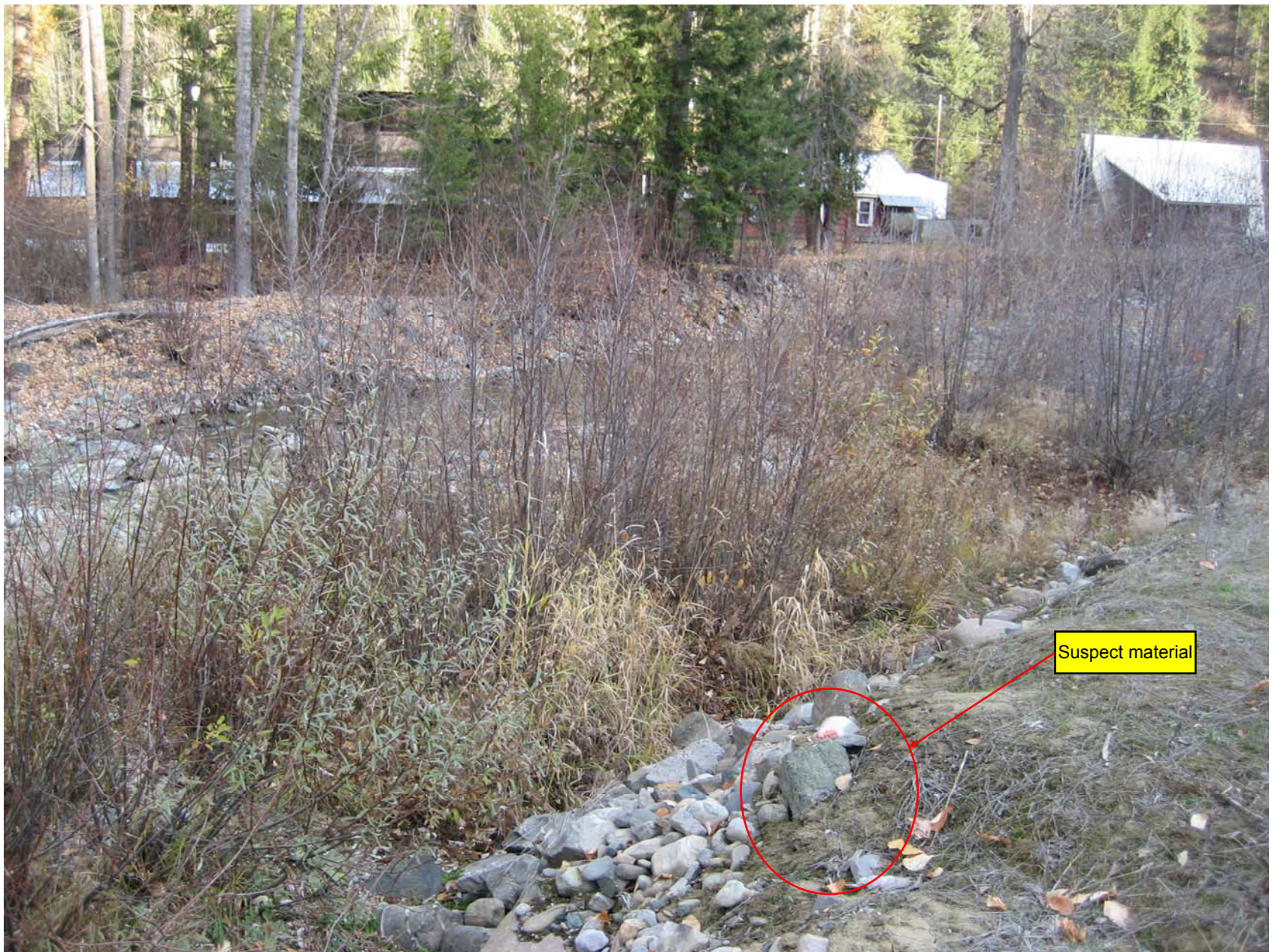
GPS LOCATION: FC6



Attachment C
Flower Creek Visual Inspection Photo Log



FC1 – Looking Upstream (South)



FC2 – Looking Upstream (South)



FC3 – Looking Downstream (North)



FC4 – Looking Upstream (South)



FC5 – Looking Upstream (South)



FC6 – Looking Upstream (South)



South of FC6 – Looking Upstream (South)



South of FC6 – Looking Upstream (South)



South of FC6 – Looking Upstream (South)



Overflow Channel – Downstream of West Balsam St, Bridge



Overflow Pond – Downstream of West Balsam St, Bridge